Economic Implications for Producer Investments in Value-Added Business

Final Report

To

Indiana's Value Added Agriculture Grant Program
Office of Commissioner of Agriculture

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Purpose of the Research

This research addresses one of the critical issues the industrialization of agriculture poses for producers. Part of the industrialization process involves forming more tightly aligned supply chains that extend from the producer through the first handler to the processor and potentially even to the retailer. This process is driven by pressures to: (i) improve efficiency, (ii) manage quality, (iii) reduce risk and (iv) increase consumer responsiveness. A critical issue is the role the producer should play in the formation of these chains, which involves decisions of where and when to invest in value-added agricultural businesses.

This research addresses the question of where are the most attractive opportunities for investment in value-added agriculture. The purpose of this research is to identify the returns and risks for producers who take the initiative in the formation of food supply chains through investment in value-added first handling, processing, or other downstream activities. Examples of producer investments in value-added agriculture, to date, include pasta processing, wet corn milling, and beef and pork processing. These investments are structured in a variety of ways including joint ownership with other producers, New Generation Cooperatives, strategic alliances, and joint ventures. The results of the research will be useful to producers as they consider future investment options as well as to policy makers as they examine ways to maintain viable rural communities.

The funding provided from the Indiana Value-Added Agriculture Grant Program served as matching funding to a grant from American Farm Bureau and as such the results represent the output from the combined research.

Direction of the Research

The research has examined the risk and return implications for agricultural producers as they consider investment in value-added business activates. Three sub-sectors of agriculture have been considered in depth: corn, pork, and beef. In each case a stochastic simulation model was developed. Alternative strategic business decisions that the producer could make were identified. These alternative business decisions involved investments in value-added activities associated with the commodity they were producing as well as diversification into stocks and bonds. Stochastic dominance analysis was used to evaluate the risk and return implications of the different business decisions.

Opportunities that were examined for corn producers, included investment in both wet and dry corn milling. A strategic business analysis was performed followed by the development of a simulation model to analyze the impact of investment in a dry corn milling (ethanol) operation.

Opportunities for hog producers to invest in hog packing were evaluated. A stochastic simulation model was developed first and then used to analyze alternative business strategies including investing all equity in the hog farm and investing different percentages of equity in the hog farm, hog packing and stocks and bonds.

The scenarios evaluated from the perspective of the cow-calf producer reflect decisions that beef producers are currently facing. The base scenario, sell the calves at weaning, was compared to different retained ownership scenarios, incorporation of improved genetics in the beef herd, different pricing grids in a coordinated marketing system, and diversification into the stock market. The different pricing grids reflect situations that producers are currently considering with cooperative marketing programs that are being established by beef producers.

Conclusions

Four general conclusions can be drawn from the research results to date:

1. Diversification into value added business related to farmers' commodity can be a good investment if there is negative correlation between farm income and processor income.

When a product is characterized by volatile commodity prices and relatively stable wholesale/retail prices there tends to be a high degree of negative correlation between farm income and processor income. This phenomena exists in the pork industry and the research done as part of this project identified that there is the potential for hog producers to diversify beyond the farm into the processing stage and increase expected return and decrease risk. Of course, achieving this potential depends upon finding an appropriate business organizational structure for successful implementation. Further study is addressing this important issue of business organizational structure.

2. A strategic business analysis is very important.

A strategic business analysis that carefully and systematically identifies all assumptions is an important step in the evaluation of investment alternatives. A typical framework for this analysis is to examine the five forces as set out by Porter. In the analysis of the corn sub-sector a Porter analysis was done of wet corn milling and dry corn milling. One interesting result follows from the analysis of "Rivalry Among Competitors" force. In wet corn milling, industry concentration is very high with the top three firms having almost 80% market share in the corn sweetener market and the top three firms having over 86% market share in the lysine industry. From the perspective of competitive rivalry the wet corn milling industry is not a good prospect for any firm to enter, and certainly not one for farmer owned cooperatives to try and enter.

3. Some aspects of agricultural production are not as profitable as outside investments – this is a lifestyle choice but attracting outside investment will be a challenge.

Historical figures on the profitability of cow-calf operations are consistently very low or negative. In these situations the diversification scenarios are attractive because the other investments usually yield higher returns. A long-term challenge for producers in this sector will be how to attract outside investment capital, especially if they wish to diversify their investments and require outside investment to keep the ranch viable.

4. Diversification can be an important strategy

Diversification beyond the farm or ranch often results in both an increase in expected return and a decrease in the variability of the returns (or a decrease in risk) when compared 100% investment in the farm. Just as nonfarm businesses place a high priority on having a diversified portfolio farmers and ranchers should strive for a balanced portfolio of investments.

Outputs Relevant to this Project

Masters Theses Completed:

Jones, Brian R. “The Risk Return Implications of Value-Added Investment by Hog Producers” M.S. Thesis, Purdue University. Spring 1999. (Thesis received Kenneth Naden award, given by the National Council of Farmer Cooperatives for the best M.S. thesis.)

Andreson, Kevin “The Risk and Return Implications of Value Added Investment by Corn Producers” M.S. Thesis, Purdue University. Spring 2000

Van Fleet, Shylea “The Risk and Return Implications of Value Added Decisions by Beef Producers in Coordinated Supply Chains” M.S. Thesis, Purdue University. Fall 2000

Presentations that resulted from the Research:

Fulton, Joan R. “Producer Investments in the Value-Added Business.” Poster Presentation at American Farm Bureau Annual Meeting, January 9, 2000, Houston, Texas.

Fulton, Joan R. “Concentration, Consolidation and Structural Change in Agribusiness Sector.” Presentation to The National Agricultural Research, Extension, Education, and Economics Advisory Board Meeting. March 14, 2000, Washington DC.

Fulton, Joan R. “ Are Producer Alliances/Networks and Alternative for Producers?” Presentation at Policy Issues in the Changing Structure of the Food System (American Agricultural Economics Association pre-conference). July 29, 2000, Tampa Florida.

Fulton, Joan R. “Structural Change in Agribusiness: Challenges and Opportunities for Producers.” Presentation at *Cooperative Marketing and Bargaining Seminar*. Hosted by Ripley County Farm Bureau, Inc. November 17, 2000.

Other Publications Published:

Fulton, Joan, Brian Jones and Lee Schrader. (1998) "New Generation Cooperatives." *Purdue Agricultural Economics Report*. September. p. 7-10.

Jones, Brian R., Joan R. Fulton and Frank J. Dooley (1999) “Hog Producer Investment in Value-Added Agribusiness: Risk and Return Implications.” Paper presented at the 1999 Annual Meeting of the American Agricultural Economics Association and abstract published in *American Journal of Agricultural Economics*. 81, 5. p. 1289.

Materials to include with report

1. Copy of each of the theses
2. Copy of the Selected Paper
3. Copy of the PAER article on New Generation Cooperatives
4. Copy of the slides for the Farm Foundation Presentation